

**FINAL**

**Environmental Assessment  
20-MW Windfarm  
and Associated Energy Storage Facility**

**Tennessee Valley Authority  
Knoxville, TN 37917**

**April 2002**

**COVER SHEET**

**Environmental Assessment for the  
20-MW Windfarm  
and Associated Energy Storage System Facility**

- Responsible Agency: Tennessee Valley Authority (TVA), Public Power Institute (PPI), Norris, Tennessee.
- Proposed Action: The Tennessee Valley Authority proposes to acquire electricity from a windfarm either on Buffalo Mountain in Anderson County, Tennessee, or on Stone Mountain in Johnson County, Tennessee. TVA also proposes to construct and operate a Regenesys™ Energy Storage Facility near the selected windfarm site. The wind turbines would provide a source of power for TVA's Green Power Switch program and the Regenesys™ facility would demonstrate an effective technology for electric power storage.

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- Report Designation: Environmental Assessment (EA)
- Abstract: The purpose of this project is to acquire about 20-MW of wind-generated electricity for TVA's Green Power Switch program and to construct an associated Regenesys™ Energy Storage Facility which would store the wind-generated energy during periods of low demand and release it during periods of high demand. This EA evaluates two action alternatives and the No-Action Alternative. The two action alternatives differ in the location of the proposed windfarm and Regenesys™ facilities. The No-Action Alternative states that the windfarm and Regenesys™ facility would not be built and TVA would need to find other sources of renewable energy in order to expand its Green Power Switch program. TVA would also lose the ability to demonstrate the use of the Regenesys™ energy storage facility with the intermittent generation from the proposed windfarm. Areas considered in the impact analysis are air quality, socioeconomic resources, groundwater and geological resources, wetlands, floodplains, cultural resources, terrestrial ecology, aquatic ecology, threatened and endangered species, visual resources, noise, solid and hazardous wastes, land use, transportation, environmental justice, water supply and wastewater. TVA's preferred alternative is to construct the windfarm on Buffalo Mountain in Anderson County, Tennessee. TVA does not, at this time, have a preference among the four Regenesys™ facility sites associated with the Buffalo Mountain alternative.

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**ACRONYMS AND ABBREVIATIONS**

$\mu\text{g}/\text{m}^3$	micrograms per cubic meter
ACHP	Advisory Council on Historic Preservation
ADT	average daily traffic
AFM	Acid Forming Materials
AQCR	air quality control region
BCG	Basal Clastics Group
BMP	best management practices
BTU	British Thermal Unit
C	degrees Celsius
CAA	Clean Air Act
CAFB	Columbus Air Force Base
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CO	carbon monoxide
dB	decibel
dBA	A-weighted sound level
DC	direct current
DNL	day-night average sound level
DOE	Department of Energy
EA	environmental assessment
EAL	environmental assessment level
EMS	Electrolyte Management System
EO	Executive Order
EPA	Environmental Protection Agency
EPRI	Electric Power Research Institute
EQS	environmental quality standards
et al.	and others
FAA	Federal Aviation Administration
FICON	Federal Interagency Committee on Urban Noise
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
ft	feet/foot
$\text{ft}^2$	square feet/square foot
FTA	fault tree analysis
FY	fiscal year
g	gram
gpm	gallons per minute
GPS	Green Power Switch
HAZOP	hazard and operability analysis
HM	hazardous material
HSWA	Hazardous and Solid Waste Amendments
HUD	Department of Housing and Urban Development
HW	hazardous waste
Kg	kilogram
km	kilometers
kV	kilovolt
kW	kilowatt
KWh	kilowatt hour

lb	pound/pounds
lb/ft <sup>3</sup>	pounds per cubic foot
m <sup>3</sup>	cubic meter
mg/m <sup>3</sup>	milligram per cubic meter
mgd	million gallons per day
mm	millimeter(s)
mph	miles per hour
m/s	meters per second
MW	Megawatt
N	north
NAAQS	National Ambient Air Quality Standards
NaBr <sub>3</sub>	sodium tribromide
NC	North Carolina
NEPA	National Environmental Policy Act
NERP	National Environmental Research Park
NFPA	National Fire Protection Association
NIMBY	not in my back yard
NNL	National Natural Landmark
NO <sub>2</sub>	nitrogen dioxide
NO <sub>x</sub>	nitrogen oxides
NRC	Nuclear Regulatory Commission
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
O <sub>3</sub>	ozone
ORNL	Oak Ridge National Laboratory
Pb	lead
PEM1A	emergent herbaceous wetland
pH	relative alkalinity or acidity
PHA	Public Hunting Area
PL	Public Law
PM	particulate matter
PM <sub>10</sub>	particulate matter equal to or less than 10 microns in aerodynamic diameter
PM <sub>2.5</sub>	particulate matter equal to or less than 2.5 microns in aerodynamic diameter
PNNL	Potential Natural National Landmark
PPA	Power Purchase Agreement
PPI	Public Power Institute
PPS	Protection Planning Site
ppm	parts per million
PVDF	polyvinyl di-flouride
RCRA	Resource Conservation and Recovery Act
RFP	Request for Proposals
ROWs	Right-of-ways
RPM	Revolutions per minute
SARA	Superfund Amendments and Reauthorization Act
SCR	selective catalytic reducers
SHPO	State Historic Preservation Office
SO <sub>2</sub>	sulfur dioxide
SO <sub>x</sub>	sulfur oxides
TDEC	Tennessee Department and Environment and Conservation
TDOT	Tennessee Department of Transportation

TN	Tennessee
TNEPPC	Tennessee Exotic Pest Plant Council
tpy	tons per year
TSCA	Toxic Substances Control Act
TSP	total suspended particulate
TVA	Tennessee Valley Authority
TWRA	Tennessee Wildlife Resources Agency
UBC	Uniform Building Code
UK	United Kingdom
U.S.C.	United States Code
USFS	United States Forest Service
USGS	United States Geological Service
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound
vpd	vehicles per day
W	west
WMA	Wildlife Management Area
WWTP	wastewater treatment plant
yd <sup>3</sup>	cubic yard
yr	year

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